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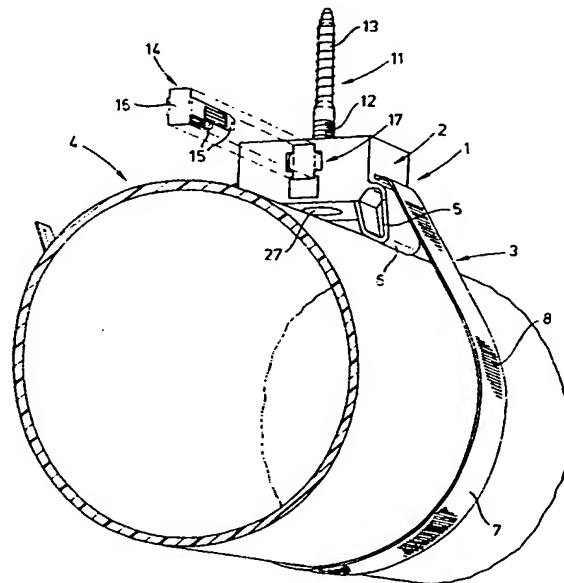
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(54) **Universal pipe bracket.**

(57) A pipe bracket (1) comprises an annular support element (3), within which a pipe (4) can be accommodated, and mounting means (2) fixed to the support element. The mounting means (2) have a hole (27) into which a pin (11) of the fixing means can be inserted by sliding and can be secured in various positions. The pin (11) is provided with an external screw thread (12), whilst a nut element (14) can be accommodated in the hole, which nut element (14) can be slid essentially in the tangential direction with respect to the hole (27) and has parallel ribs (25), the spacing of which is equal to the spacing of the screw thread (13) of the pin (11).

Fig-1



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The invention relates to a pipe bracket which has an annular support element, within which a pipe can be accommodated, and mounting means fixed to the support element. Pipe brackets of this type are generally known. They are used, for example, for supporting plastic waste/drain pipes, aluminium pipes for mechanical ventilation, water supply pipes and the like.

These known pipe brackets have the disadvantage that adjustment of the height at which the pipe is mounted is not possible once the pipe has been installed. If the known bracket has to be adjusted, the pipe has to be removed, after which the bracket can be turned in the desired direction. The pipe then has to be fixed in the bracket again. This disadvantage is felt in particular in the case of liquid discharge pipes, such as waste/drain pipes, which have to run at a certain inclination.

The aim of the invention is, therefore, to provide a pipe bracket which is more flexible in use in this respect. This is achieved in that the mounting means have a hole into which a pin of the fixing means can be inserted by sliding and can be secured in various positions. To prevent the pin being inserted too far and damaging the pipe, the hole has internal stop ribs to delimit the distance over which a pin can be pushed into the hole from the side facing away from the pipe.

The stop ribs can be hook-shaped in the direction towards the side facing away from the pipe and oblique on the other side and can each be located at the end of a spring arm, which spring arms are each located in an axial groove in the wall of the hole, in such a way that when a pin is inserted from the side facing towards the pipe bracket the stop ribs are forced apart. The pipe bracket can then be fixed using various types of pins, as will be explained below.

In practice, the pipe brackets are fixed to a ceiling or wall; mounting on the underside of a floor, for example in the crawl space, is another method used. The threaded end is introduced beforehand into the ceiling or wall. The threaded end is sawn off to the desired length in situ, these measures being carried out in such a way that the mounted pipe has the required inclination.

The known brackets are provided with a fixed nut which is screwed onto the threaded end, which has been mounted beforehand as described, until the bracket has reached the required position for water drainage. However, the threaded end, which often has been sawn off by hand, has a burr, as a result of which it is difficult to fit the nut on the threaded end. The threaded end therefore first has to be filed down, which is very labour intensive.

In this context, the invention provides a pipe bracket with which the pin is provided with an external screw thread and with which a nut element

can be accommodated in the hole, which nut element can be slid essentially in the tangential direction with respect to the hole and has parallel ribs, the spacing of which is equal to the spacing of the screw thread of the pin. The pin can now be inserted by its screw-threaded end into the hole in the pipe bracket until the desired height position is reached. The sliding nut is then fitted, as a result of which this position is fixed. If desired, the height of the pipe bracket can also be changed by turning, since the screw function has been retained.

The invention also relates to a combination of a pipe bracket according to the invention, a pin provided with a screw thread and a nut element, the nut element comprising two lips which are each provided with parallel ribs, which lips are located in diametrically opposing positions in the hole.

The fixing block has two slots which open tangentially into the hole and in which the lips can be slid. Furthermore, the ribs of one lip are offset in their transverse direction by half the rib spacing with respect to the ribs of the other lip. In this way a firm, uniform support for the pipe bracket is obtained.

In order to fix the nut element in the correct position in the fixing block with respect to the pin, the lips are joined to one another at one end by a stop plate which in the working position of the lips is in contact with the side of the fixing block where the slots open. To prevent the nut element falling out of the fixing block, each lip carries a barb-shaped protrusion at its end distal to the stop plate, which barb-shaped protrusion is accommodated in a groove in each slot and can be hooked firmly behind a shoulder provided in the groove.

The said pipes are available in various diameters and, therefore, the known pipe brackets are available in various standard sizes. The fact that the known pipe brackets have to be available in various sizes leads to high production and stockholding costs. Moreover, the flexibility is limited; a good mounting is not available for pipes of non-standard dimensions.

According to the invention, the pipe bracket can be further improved in that the support element comprises a flexible strip, the length of which is adjustable depending on the diameter of the pipe to be accommodated. In a simple embodiment, a fixing block is provided to which the flexible strip and the mounting means are fixed. The flexible strip can be pulled tight around the pipe and fixed in this position. Consequently, the pipe bracket can be used for diverse pipe diameters, including those which do not conform to a particular standard.

The flexible strip can preferably be secured by means of at least one ratchet connector. When the strap is pulled tight around the pipe, the strap can also be fixed in place immediately by means of this

ratchet connector. It is also possible to fix the strap by two such ratchet connectors, each of which then interacts with one particular end of the strap.

According to an embodiment which is easy to use, the fixing block is provided with two flexible strips located either side, one of said strips carrying a fastener provided with barb-shaped teeth at its end and the other being provided over at least part of its length with corresponding barb-shaped teeth which face in the opposite direction and which can be made to interact with the teeth of the fastener, depending on the diameter of the pipe to be accommodated.

The fastener can have a slit running in the longitudinal direction of the associated section of the strap, which slit is delimited on one side by a resilient closing lip provided with barb-shaped teeth. The pipe bracket can be released by lifting up this lip, for example using a screwdriver, in such a way that the teeth no longer engage with one another and the relevant section of the strap can be slid out of the slit.

Fixing block, strip or strips and ratchet connector can very readily be produced in one piece from plastic.

According to a second possibility, the hole in the fixing block has a widened section on the side facing towards the pipe, in which widened section the protruding collar of a knock-in plug can be accommodated. The invention also relates to a combination of a pipe bracket according to the invention and a knock-in plug provided with a plastic plug body provided with a collar and a knock-in screw inserted in the plug body. The knock-in screw can be driven into the plug using a hammer in a known manner and if necessary can be tightened using a screwdriver.

Finally, the invention also relates to a tensioning element for tensioning the strip. Preferably, the tensioning element has a toothed shape which can be made to interact with a barb-shaped tooth of the flexible strip provided with teeth.

The invention will be explained in more detail below with reference to a few illustrative embodiments shown in the figures.

Fig. 1 shows a perspective view of the pipe bracket according to the invention and a pipe fixed thereto.

Fig. 2 shows the pipe bracket on its own.

Fig. 3 shows a perspective view, partly in cross-section.

Fig. 4 shows cross-section IV-IV from Figure 3.

Fig. 5 shows a partial top view of Figure 3.

Fig. 6 shows a cross-section of a fastener.

Fig. 7 shows a perspective view, partly in cross-section, of the pipe bracket.

Fig. 8 shows the pipe bracket with a tensioning element in the not yet completely tensioned state.

Fig. 9 shows the pipe bracket according to Figure 8 with the tensioning element in the tensioned state.

Fig. 10 shows a first embodiment of the tensioning element.

Fig. 11 shows a second embodiment of the tensioning element.

The pipe bracket 1 shown in Figure 1 comprises a fixing block 2 and a flexible strip 3 which is provided with barb-shaped teeth and in which a pipe 4 is mounted. By means of the flexible strip 3, the pipe 4 is held pressed against locating ridges 5, only one of which can be seen in Figure 1.

As shown in Figure 2, the fixing block 2 carries two such locating ridges 5, which have an inclined inner face 6 such that pipes of different diameters can be reliably supported.

It can also be seen in Figure 2 that the flexible strip 3 is composed of two sections, the one section 7 of which carries barb-shaped teeth 8 and the other section 9 of which carries a fastener, which is indicated in its entirety by 10.

It can also be seen in Figure 1 that the fixing block 2 carries a pin 11, which consists of a threaded end 12 and screw end 13 which, for example, can be screwed into a plug fitted in a wall or floor. The threaded end 12 is secured in the fixing block 2 by means of the sliding nut, which is indicated in its entirety by 14 and in Figure 1 is shown both when it has been removed and in the fitted position.

The sliding nut 14 comprises two lips 15 which are connected to one another by a stop plate 16. Said lips 15 can be pushed into a hole 17 in the fixing block 2. Said hole 17 can also clearly be seen in Figures 3, 4, 5 and 7.

The hole 17 is delimited by a barrier 18 on the side of the fixing block 2 which faces towards the pipe and by the intermediate barrier 19 on the other side. The hole wall sections 20 extend between said barriers 18, 19, but not over the entire width of the hole 17. As a result, openings 22, in which the lips 15 fit, remain between the barriers 18, 19 and the walls 21 of the hole 17.

The lips 15 carry barb-shaped teeth 23 which face outwards and which are each accommodated in a groove 24 of the relevant hole wall 21.

On the sides which face towards one another, the lips 15 have ribs 25, which are mutually offset by half a rib spacing with respect to one another. The screw thread of the threaded end 12 fits between the ribs 25, as can be seen in Figures 3 and 4.

On its side facing towards the pipe, the fixing block 2 also has an interior barrier 26, into which the hole 27 for the threaded end 12 having a widened section 28 opens. The hole 27 is not completely cylindrical, but has grooves 29 in which

spring arms 30 are accommodated which form a continuation of the wall of the hole 27. Stop ribs 31, by means of which it can be prevented that the threaded end 12 of the pin could be pushed too far in the direction towards the pipe, are arranged at the end of the spring arms 30.

As can clearly be seen in Figure 7, the side of the stop ribs 31 which faces away from the pipe is square, whereas the side facing towards the pipe tapers obliquely. As a consequence it is possible to insert, for example, a knock-in plug from the end facing towards the pipe, the spring arms 30 then being pushed outwards by the sloping shape of the stop ribs.

The cross-section in Figure 8 shows a pipe bracket which is drawn loosely around the pipe 4. The section 7 provided with teeth 8 is pushed into the fastener 10, but can still be pulled tighter. As tightening of the section 7 by hand can be difficult, a separate tensioning element 32 is provided, which is shown in partial cross-section in Figure 8.

The tensioning element 32 has a handle 33 which, via the curved region 34, merges into tensioning head 35. Said tensioning head is provided with a slit-shaped opening 36, into which the section 7 of the strap can be pushed. The opening 36 has a sharp edge 37, which can engage behind one of the teeth 8.

The tensioning element 32 is fitted on the strap 7 in connection with the tensioning of the strap 7, 9. In this operation, the tensioning head 36 must come to bear against the surface 38 of the fastener 10. The tensioning element 32 is then turned in such a way that the curved section 34 rolls over the surface 38 of the fastener 10. By this means strap section 7 is pulled through the fastener 10, the teeth 8 clicking over the teeth 39 of the fastener 10. This results in the position shown in Figure 9 being obtained.

If necessary, the tensioning element can then be released and refitted on strap section 7 in order to tension the latter yet further.

A first variant of the tensioning element 32 is shown in Figure 10. In this embodiment the tensioning head 37 has a slit 36 which is open at one side. A tensioning element of this type must be made of a rigid material and is therefore preferably made of metal.

The tensioning element 40 shown in Figure 11 has a slit 41 which is delimited on both sides. A tensioning element of this type can be made of a less rigid material and can therefore, for example, be made of plastic.

Claims

1. Pipe bracket which has an annular support element, within which a pipe can be accommodated,

and mounting means fixed to the support element characterised in that the mounting means have a hole into which a pin of the fixing means can be inserted by sliding and can be secured in various positions.

2. Pipe bracket according to Claim 1, wherein the hole has internal stop ribs to delimit the distance over which a pin can be pushed into the hole from the side facing away from the pipe.

3. Pipe bracket according to Claim 2, wherein the stop ribs are hook-shaped in the direction towards the side facing away from the pipe and oblique on the other side and are each located at the end of a spring arm, which spring arms are each located in an axial groove in the wall of the hole, in such a way that when a pin is inserted from the side facing towards the pipe bracket the stop ribs are forced apart.

4. Pipe bracket according to Claim 1, 2 or 3, wherein the pin is provided with an external screw thread and a nut element can be accommodated in the hole, which nut element can be slid essentially in the tangential direction with respect to the hole and has parallel ribs, the spacing of which is equal to the spacing of the screw thread of the pin.

5. Combination of a pipe bracket according to Claim 4, a pin provided with a screw thread and a nut element, the nut element comprising two lips which are each provided with parallel ribs, which lips are located in diametrically opposing positions in the hole.

6. Combination according to Claim 5, wherein the fixing block has two slots which open tangentially into the hole and into which the lips can be slid.

7. Combination according to Claim 5 or 6, wherein the ribs of one lip are offset in their transverse direction by half the rib spacing with respect to the ribs of the other lip.

8. Combination according to Claim 6 or 7, wherein the lips are joined to one another at one end by a stop plate which in the working position of the lips is in contact with the side of the fixing block where the slots open.

9. Combination according to Claim 8, wherein each lip carries a barb-shaped protrusion at its end distal to the stop plate, which barb-shaped protrusion is accommodated in a groove in each slot and can be hooked firmly behind a shoulder provided in the groove.

10. Pipe bracket according to one of Claims 1 - 4, wherein the support element comprises a flexible strip, the length of which is adjustable depending on the diameter of the pipe to be accommodated.

11. Pipe bracket according to Claim 10, wherein the mounting means comprise a fixing block to which the flexible strip is fixed.

12. Pipe bracket according to Claim 10 or 11, wherein the flexible strip can be secured by means

of at least one ratchet connector.

13. Pipe bracket according to Claim 10, 11 or 12, wherein the fixing block is provided with two flexible straps located either side, one of said strips carrying a fastener provided with barb-shaped teeth at its end and the other being provided over at least part of its length with corresponding barb-shaped teeth which face in the opposite direction and which can be made to interact with the teeth of the fastener, depending on the diameter of the pipe to be accommodated.

14. Pipe bracket according to Claim 13, wherein the fastener has a slit running in the longitudinal direction of the associated section of the strap, which slit is delimited on one side by a resilient closing lip provided with barb-shaped teeth.

15. Pipe bracket according to Claim 13 or 14, wherein the fastener and the adjacent strip section merge smoothly into one another on the side facing towards the pipe.

16. Pipe bracket according to one of Claims 10 - 15, wherein fixing block, strip or strips and ratchet connector form one piece made of plastic.

17. Pipe bracket according to one of Claims 10 - 16, wherein the fixing block carries two ridges against which a pipe can be clamped.

19. Pipe bracket according to one of Claims 1 - 4 or 10 - 17, wherein the hole in the fixing block has a widened section on the side facing towards the pipe, in which widened section the protruding collar of a knock-in plug can be accommodated.

20. Combination of a pipe bracket according to Claim 19 and a knock-in plug provided with a plastic plug body provided with a collar and a knock-in screw inserted in the plug body.

21. Combination of a pipe bracket according one of Claims 10 - 19 and a tensioning element which can be made to interact with the strip.

22. Combination according to Claim 21, wherein the tensioning element has a toothed shape which can be made to interact with a barb-shaped tooth of the flexible strip provided with teeth.

23. Combination according to Claim 22, wherein the tensioning element has a convex curved surface which can be rolled over a surface of the fastener which is attached to the other flexible strip when the strips are tensioned.

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fig-1

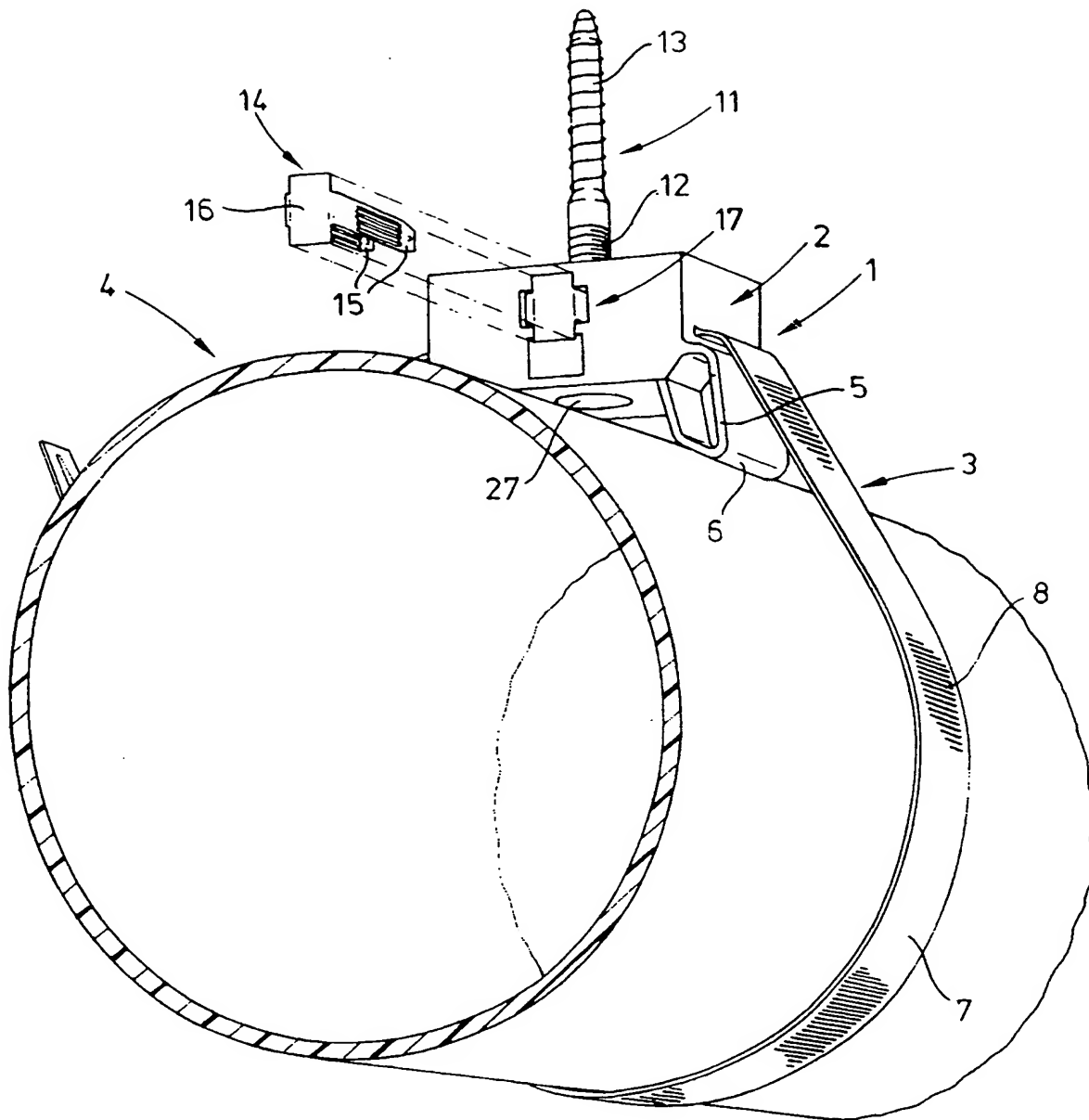
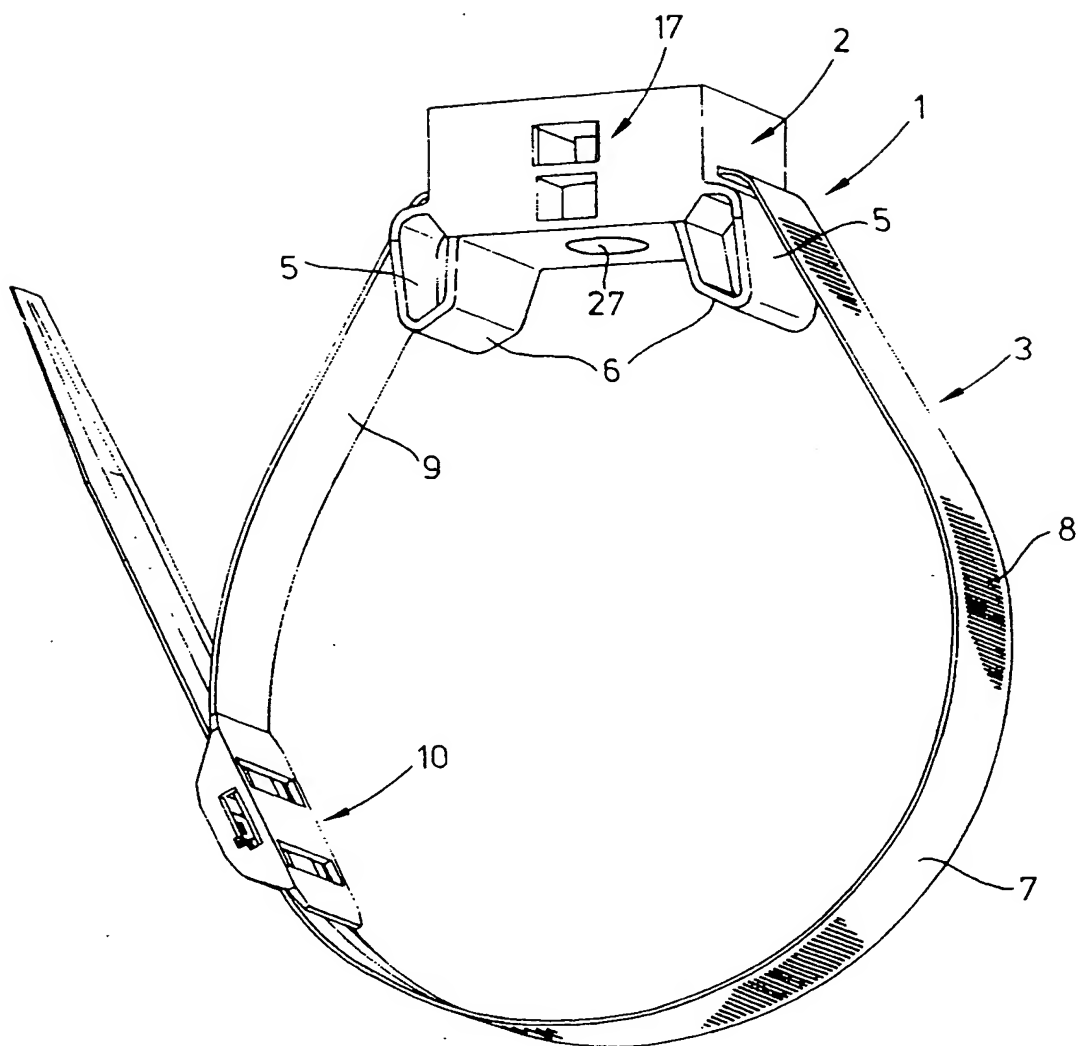


fig - 2



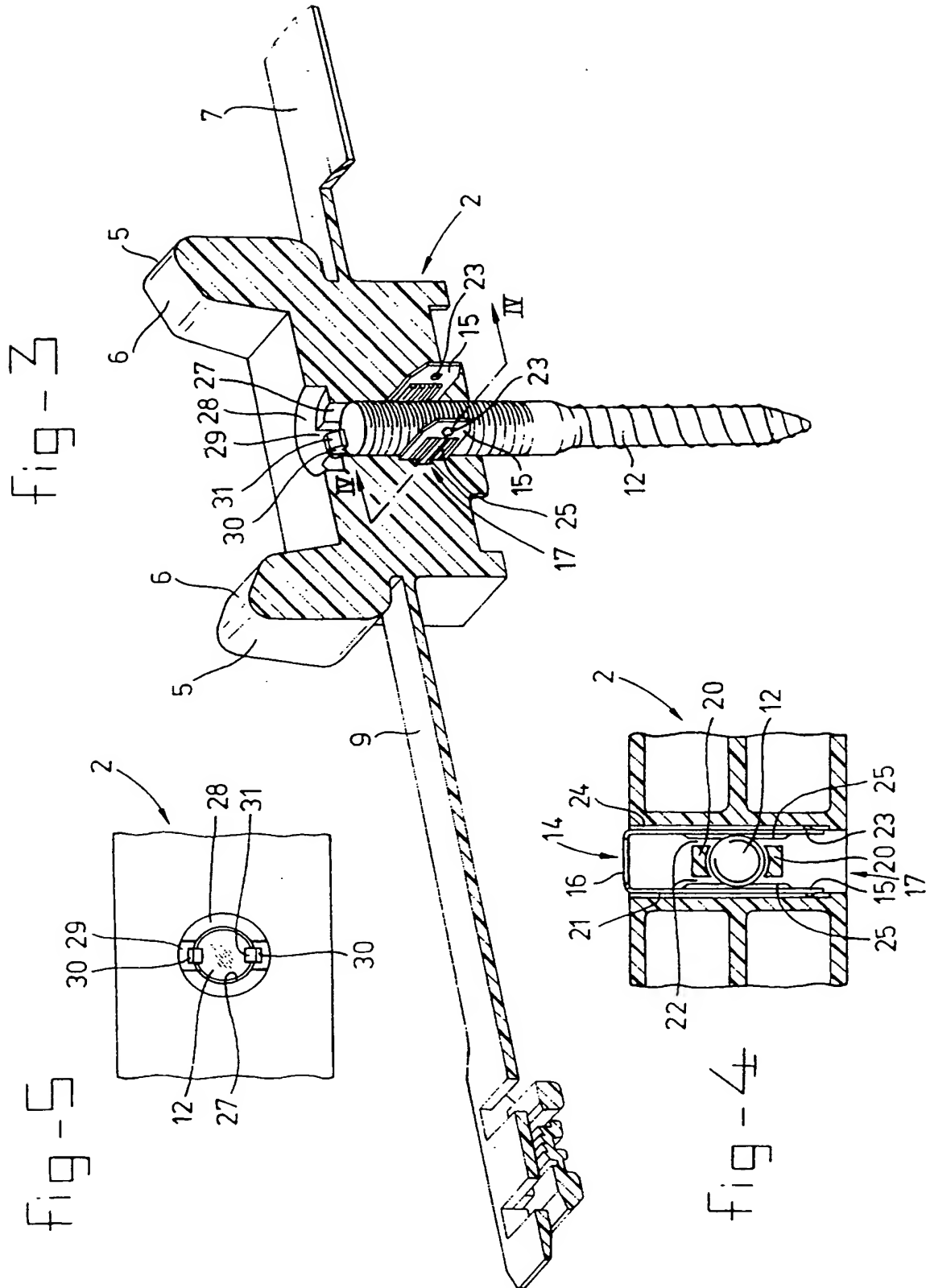


fig-6

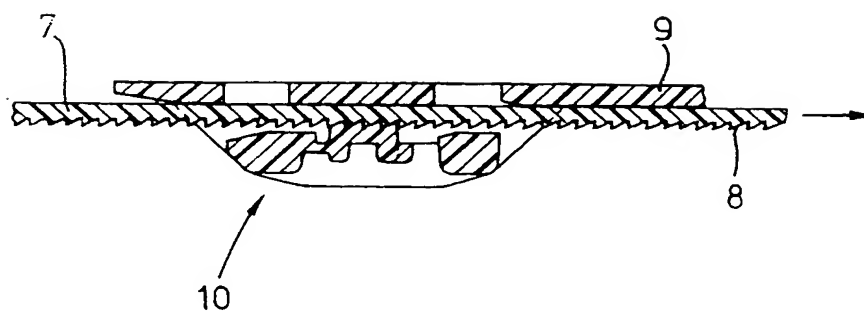


fig-7

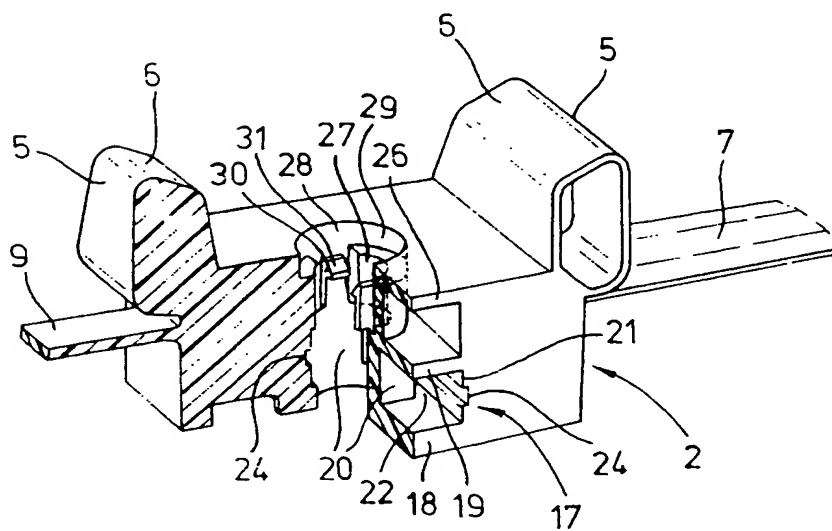


fig - 8

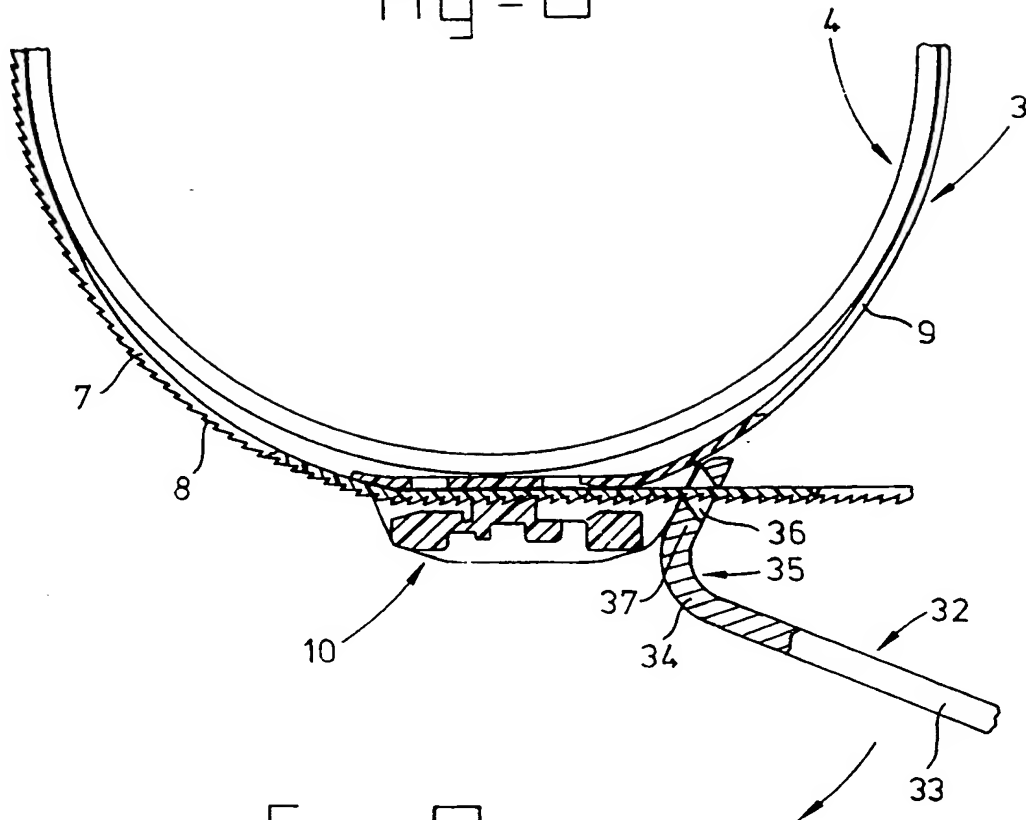


fig - 9

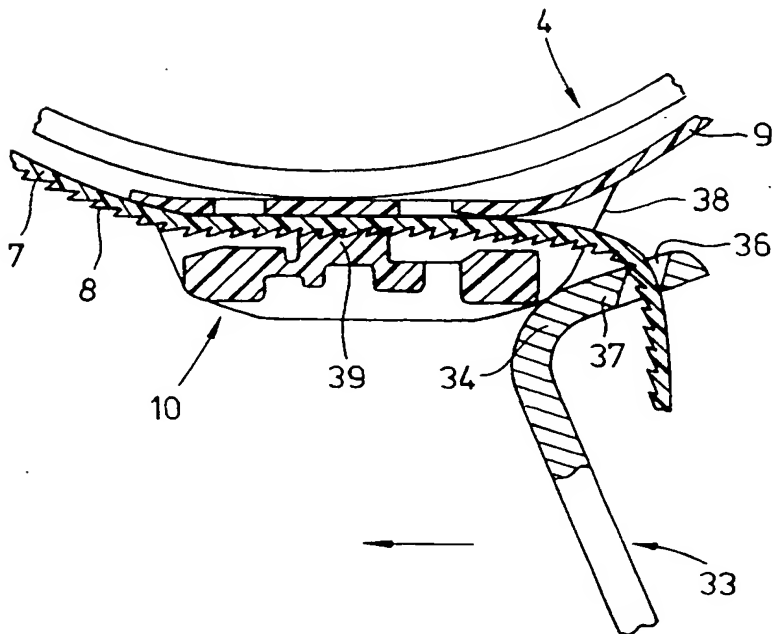


fig-10

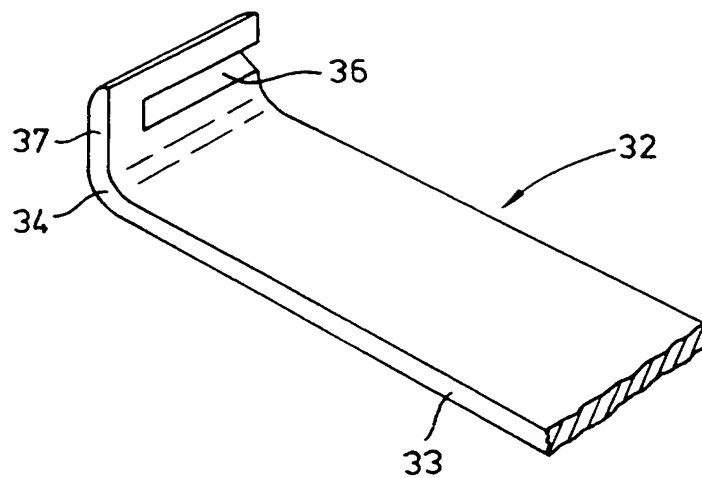
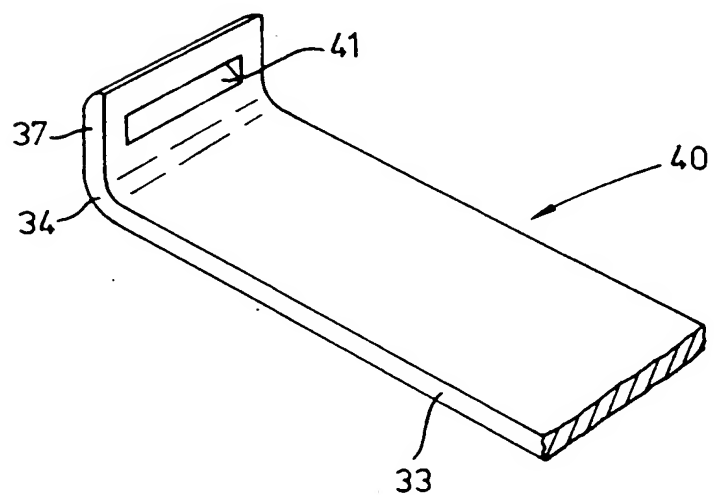


Fig-11





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EUROPEAN SEARCH REPORT

Application Number
EP 95 20 0204

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	FR-A-2 071 357 (PLASTIC-OMNIUM) 17 September 1971 * page 2, line 39 - page 3, line 29 * * page 4, line 29 - line 40 * * claims 1-4,6-12; figures 1,2,4 * ---	1,4,6, 8-17	F16L3/137 F16L3/14 F16B37/02
A	FR-A-2 410 168 (MAI-XUAN-PHONG) 22 June 1979 * the whole document * ---	4	
A	DE-U-19 59 167 (G. REINHOLD) 27 April 1967 ---		
A	NL-A-8 200 870 (W. A. DEUTSCHER PROPRIETARY LIMITED) 3 October 1983 ---		
A	FR-A-2 279 010 (FIMO) 13 February 1976 ---		
A	FR-A-2 452 655 (NIFCO INC.) 24 October 1980 ---		
A	FR-A-2 214 850 (M. L. M. THORSMAN) 19 August 1974 -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) F16L F16B
Place of search THE HAGUE		Date of completion of the search 18 May 1995	Examiner Bourseau, A-M
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